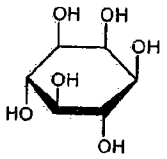
Inositol

Search Monographs



The Merck Index

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Monograph Number: 5001
Title: Inositol
CAS Registry Number: 87-89-8
CAS Name: *myo*-Inositol
Additional Names: *meso*-inositol; *i*-inositol; hexahydroxycyclohexane; cyclohexanehexol; cyclohexitol; meat sugar; inosite; mesoinosite; phaseomannite; dambose; nucite; bios I; rat antispectacled eye factor; mouse antialopecia factor
Molecular Formula: $C_6H_{12}O_6$
Molecular Weight: 180.16.
Percent Composition: C 40.00%, H 6.71%, O 53.28%
Literature References: Widely distributed in plants and animals. Growth factor for animals and microorganisms. Isoln from heart muscle: Scherer, *Ann.* **73,** 322 (1850); from liver: Woolley, *J. Biol. Chem.* **139,** 29 (1941). Synthesis: Wieland, Wishart, *Ber.* **47,** 2082 (1914); Anderson, Wallis, *J. Am. Chem. Soc.* **70,** 2931 (1948). Obtained commercially from corn steep liquor, since inositol is present as phytic acid in corn: Bartow, Walker, *Ind. Eng. Chem.* **30,** 300 (1938); **US 2112553** (1938); Hoglan, Bartow, *J. Am. Chem. Soc.* **62,** 2397 (1940); Elkin, Meadows, **US 2414365** (1947); **GB 601273** (1948 to Corn Prod. Refining). Nine possible stereoisomers: Seven are optically inactive or *meso.* Two optically active forms, the racemic form, and several *cis,trans*-isomers occur naturally. The prevalent natural form is *cis*-1,2,3,5-*trans*-4,6-cyclohexanehexol which is described here. *Reviews:* R. Beckmann, *m-Inosit* (Editio Cantor, Aulendorf, 1953); several authors in *The Vitamins,* **vol. 2,** W. H. Sebrell, Jr., R. S. Harris, Eds. (Academic Press, New York, 1954) pp 321-386; *ibid.* **vol. 3** (2nd ed., 1971) pp 340-415.
Properties: Anhydr, non-hygroscopic crystals from water or acetic acid above 80? Sweet taste. d 1.752. mp 225-227? Optically inactive. Soly in water at 25? 14 g/100 ml soln; at 60? 28 g/100 ml soln. Slightly sol in alc. Practically insol in ether and other common organic solvents. Aq solns are neutral to litmus.
Melting point: mp 225-227°
Density: d 1.752

Derivative Type: Dihydrate
Properties: Efflorescent crystals from water below 50? d 1.524. mp 218? Becomes anhydr at 100?
Melting point: mp 218°
Density: d 1.524

Derivative Type: Monophosphate
CAS Registry Number: 573-35-3
Molecular Formula: $C_6H_{13}O_9P$
Molecular Weight: 260.14.
Percent Composition: C 27.70%, H 5.04%, O 55.35%, P 11.91%
Literature References: Prepn: Posternak, Posternak, *Helv. Chim. Acta* **12,** 1165 (1929); McCormick, Carter, *Biochem. Prepn.* **2,** 65 (1952).
Properties: Crystals from water + alcohol, dec 195-197? Titrates as a dibasic acid. Freely soluble in water (1 g dissolves in 3 ml H_2O). Practically insol in abs ethanol, ether. Remarkably resistant to hydrolysis by boiling with strong alkali. May be hydrolyzed by boiling with 6*N* HCl for 14 hrs.

Therap-Cat: Vitamin B complex; lipotropic.